

APS1040S: Quality Control for Engineering Management
Summer 2020

Course Description: This course introduces quality control techniques applicable in various engineering settings. These techniques are widely used in monitoring and improving the quality of both products and services. Topics include process quality inference, statistical process control, Shewhart control charts, process capability analysis, CUSUM and EWMA charts. Various simulation models will be used to represent and generate data sets in various settings, for analysis with Python.

Exclusion **MIE364, MIE304, MIE1727 or equivalent**

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Reference Introduction to Statistical Quality Control by D.C. Montgomery, Wiley, 7th Edition.

Textbook Instructor prepared 12 chapter e-textbook to be partially accessible May 19

Software e-text videos use Excel & Minitab. Tutorial & quizzes use ECF Jupyter Notebook Python.

Pre-course **Students are encouraged to attend a pre-course Webinar 6 pm on Tuesday May 26**

Course Duration and Format: The online 9-day course (June 2-12) starts each day with a 9 am Opening Webinar via Bb Collaborate to preview the day, followed by a 1/2 hour ProctorU invigilated multiple choice quiz (a mock quiz on Day 1) via Quercus. Most questions will only require a calculator, some may require simple Python calculations using Jupyter Notebooks on ECF. There will be a morning 10:00 AM to (about) noon study program using the e-textbook, a pre lunch Webinar to reconnect, an afternoon 1:00-3:00 study program, a 3 pm poll to select the problems to be taken up at the tutorial, a 4-6 pm tutorial covering both the theory and the Python computations, and a TA run 7-9 Piazza session to take up additional questions you may have. There will be a 50% ProctorU invigilated final exam 9-12 on Tuesday Jun 16, 2020.

Daily Tutorial: Online 4-6 pm

<u>Marking:</u>	Attendance at Daily Opening Webinars	10%
	Daily ProctorU invigilated Online Quizzes	40%
	Final Online Exam 9-12 Tuesday June 16	50%

<u>Day</u>	<u>Date</u>	<u>Topic</u>	<u>Ref*</u>
1	02-Jun	Intro to Quality Control and Review of Statistics and Probability	1,2,3,4
2	03-Jun	Review of Statistical Inference	5
3	04-Jun	Introduction to Control Charts for Variables	6-8
4	05-Jun	Control Charts for Variables	8
	06-Jun		
	07-Jun		
5	08-Jun	Introduction to Control Charts for Attributes	9
6	09-Jun	Control Charts for Attributes	9
7	10-Jun	Process Capability	10
8	11-Jun	CUSUM Charts	11
9	12-Jun	EWMA Charts	12

* Chapter references shown are from the e-textbook